

**To:** Way, Steven[way.steven@epa.gov]  
**Cc:** Lewis, Brent[b1lewis@blm.gov]  
**From:** Rob Runkel  
**Sent:** Mon 3/10/2014 4:34:19 PM  
**Subject:** RE: Animas OTEC model timing

great seeing you both the other day. A couple follow up items:

1) I took the 10/2/2012 data from the Cement, Upper Animas, and Mineral gages and calculated the dissolved zinc load. The results are consistent w/ my more detailed loading analysis. In this case Cement Creek accounts for 70% of the Zn load contributed by the three drainages.

	Q	Zn(ug/L)	g/s	%
cc48	14	2640	1.05	70
a68	27	396	0.30	20
m34	30	173	0.15	10

2) The above supports the focus on Cement Creek, and somewhat cuts down the argument about the Mayflower tailings. But one thing should be looked into -- are the flow and loading contributions from Oct 2012 representative of other low flow periods? (in Oct 2012, we saw ~20% of the flow from Cement, ~40% of flow from Upper Animas, and ~40% flow from Mineral -- is this typical??).

3) the simple calculations in 1 above should be repeated for all the times in which the 3 gages have been sampled at approximately the same time. This analysis could be used to answer the question posed in #2 above; it should also show trends and changes in the system (e.g. a reduction in the % contribution of Mineral Creek following bulkhead placement at the Koehler tunnel). This analysis would also provide a check on some of the results presented by Peter Butler.

4) In hindsight it would have been good to go through my entire presentation w/ you the other day, as I think the answers to most of your questions were addressed therein. Now that I've explained some of the issues, it may be worth looking over the presentation again on your own (the more the two of you know about some of these details, the easier time we'll all have communicating the results to stakeholders).

On Wed, 5 Mar 2014, Way, Steven wrote:

> Rob,  
>  
> That helps, and I will proceed with using the existing  
> information from the June presentation. It would likely be

>useful for us if not you to discuss the simulation runs that  
>seem more valuable / informative than not given the time  
>requirements with each.  
>  
> Also, there are some other questions that we need to go over  
>with you and determine if there is an option to apply the  
>model and/or tease out of historical data coupled with more  
>recent sampling some answers. For example, what more can we  
>learn about sources above CC on the Animas, and what might we  
>do about evaluating sources relative to seasonal significance  
>not accounted for in the current modeling.  
>  
> So, let me know when you would have some time to talk with us later this week.  
>  
> Steve  
>  
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> -----Original Message-----  
> From: Rob Runkel [mailto:runkel@usgs.gov]  
> Sent: Wednesday, March 05, 2014 8:43 AM  
> To: Way, Steven  
> Cc: Brent Lewis  
> Subject: Re: Animas OTEC model timing  
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>  
> the bottle neck right now is the fact that the simulations take about 4 days to run, but the good news is  
that I have 12 processors on my desktop, so one can do 12 different simulations during the 4 day period.  
For the case of calibration, this allows me to try up to 12 different things, figure out what works best, and  
then move on to the next step of the calibration. I'm currently trying some things to improve the pH  
simulation in the Animas; once that's done there's some tweaking of the sorption parameters for copper,  
lead, and arsenic. Anyway, the bottom line is that the calibration is almost done, but due to these long  
run times it won't be complete until the end of the month. At that point we can look at 12 different  
predictive runs every 4 days -- so we should be in good shape come mid April....  
>  
> but i just reread your email and I'm not sure I answered the right question. As far as the sources go,  
you can draw from the loading analysis I presented back in June -- nothing I'm doing w/ the calibration is  
going to change that at this point  
> -- I've already assessed the flow and concentration data used to calculate the loads and I don't expect  
any major changes.  
>  
>  
> On Wed, 5 Mar 2014, Way, Steven wrote:  
>  
>> Hey Rob,  
>>  
>> The question of timing for modeling results is coming up more often  
>> with our Division Director and others. Brent and I have talked about  
>> this a few times and want to connect w you this week possibly.

>> (Apparently the check is in the mail to the GS  
>> also.)  
>>  
>> As discussed, the first piece is the A72 calibration run, and then I  
>> assume we can draw from that the respective source term (mine adits,  
>> non-point, natural) contributions more accurately/confidently? Part of  
>> the need is to confirm what our focus needs to be regarding  
>> investigating sources, and confirm that the mining related sources are  
>> without a doubt sufficiently significant vs the natural loading.  
>>  
>> We need this by mid April, which I can explain later. Let us know your  
>> thoughts.  
>>  
>> Thanks,  
>> Steve  
>